Final Design Review
EDWA
15 November 2001

Because the magnets will be installed in several different orientations, Jerry Leibfritz requested that the magnets have four tapped holes on the top, bottom, and each side perpendicular to the surface at that point. They should be at the 22% points. After some discussion, 1”-8 threaded holes 2.0" deep were agreed upon. There shall be counterbores 3.0” diameter centered with 1”-8 holes on the sides to obtain flat surfaces for eyebolts. Centers of the holes shall be 1.75” from the top and bottom surfaces (on the sides). The distance between holes shall be the same on top, bottom and sides.

Jim Lackey will discuss with the surveyors exactly where to put the alignment holes. These should go directly into the steel core. On incoming inspection the locations will be measured precisely and the appropriate offsets will be stamped in the steel to eliminate the confusion possible when the magnets are installed with various orientations. The drawings need to specify the fiducial locations and which measurements are to be stamped at inspection time.

Responding to a concern from a BD engineer with water responsibilities, Sasha said that there are no water joints inside the magnet. Where adjacent layers are connected, the conductors overlap and the two 0.25" diameter water passages are linked by a one inch long slot. This was felt to provide adequate flow.

BD requested that, for the water fittings, instead of specifying a Parker brand part "or equivalent" that Parker or Swagelok be permitted, but no others. The drawing will be changed.

The reference to forging the cores will be removed, leaving the method to the vendor. We expect that some annealing will be necessary, perhaps after the rough machining.

Fermilab may procure the steel and provide it to the machine shop. Material Control will decide. We agreed that the steel should all be procured and that rough machining could proceed on all cores. Only one core set should be final machined, leaving the possibility of small modifications to the pole face contour after magnetic measurements on the first article.

Only one steel sample will be taken from each piece of steel (not the three currently called for on the drawing), a rectangle that Fermilab will EDM into a toroid for use in magnetic testing of the steel.

Trials have led to the conclusion that bending an existing straight, rectangular beam tube is not feasible. An alternative composed of three straight sections welded together will be permitted, providing that neither the outside or inside vertical (smaller) dimension is compromised. The level of concern is high enough that this should be attempted promptly using a Fermilab welder. The tolerance on the wider dimension can be as loose as 1/16".

Magnetic measurements still need to be defined. With the severe sagitta, a long rotating coil is not worth the effort. Some combination of stretched wire for an integrated strength and short rotating coil for shape, both body and end, seems appropriate, perhaps supplemented with a Hall/NMR longitudinal scan.